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THE POPULATION AND EMPLOYMENT OUTLOOK  
FOR THE ANTHRACITE REGION OF PENNSYLVANIA



by  
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Anthracite Forest Region is a convenient name for 15 counties, shown on the map on the back of this publication, which contain or surround the hard-coal deposits of Pennsylvania. The forests of this region are now badly depleted. But preliminary estimates indicate that under good management they might, in time, furnish most of the forest products and services the region requires.

\* In cooperation with the University of Pennsylvania

THE POPULATION AND EMPLOYMENT OUTLOOK  
FOR THE ANTHRACITE REGION OF PENNSYLVANIA

Contents

Introduction and Summary of Findings	1
Analytical Breakdown into three Groups of Counties	2
Migration: 1930-1940 and 1940-1943	4
Calculation of the Future Populations: 1945, 1950, 1960	6
Estimate of the Labor Force: 1945, 1950, 1960	9
The Prospect for Employment: 1945, 1950	12
Conclusions	20
Appendix - Methods used in the calculation of future population	22

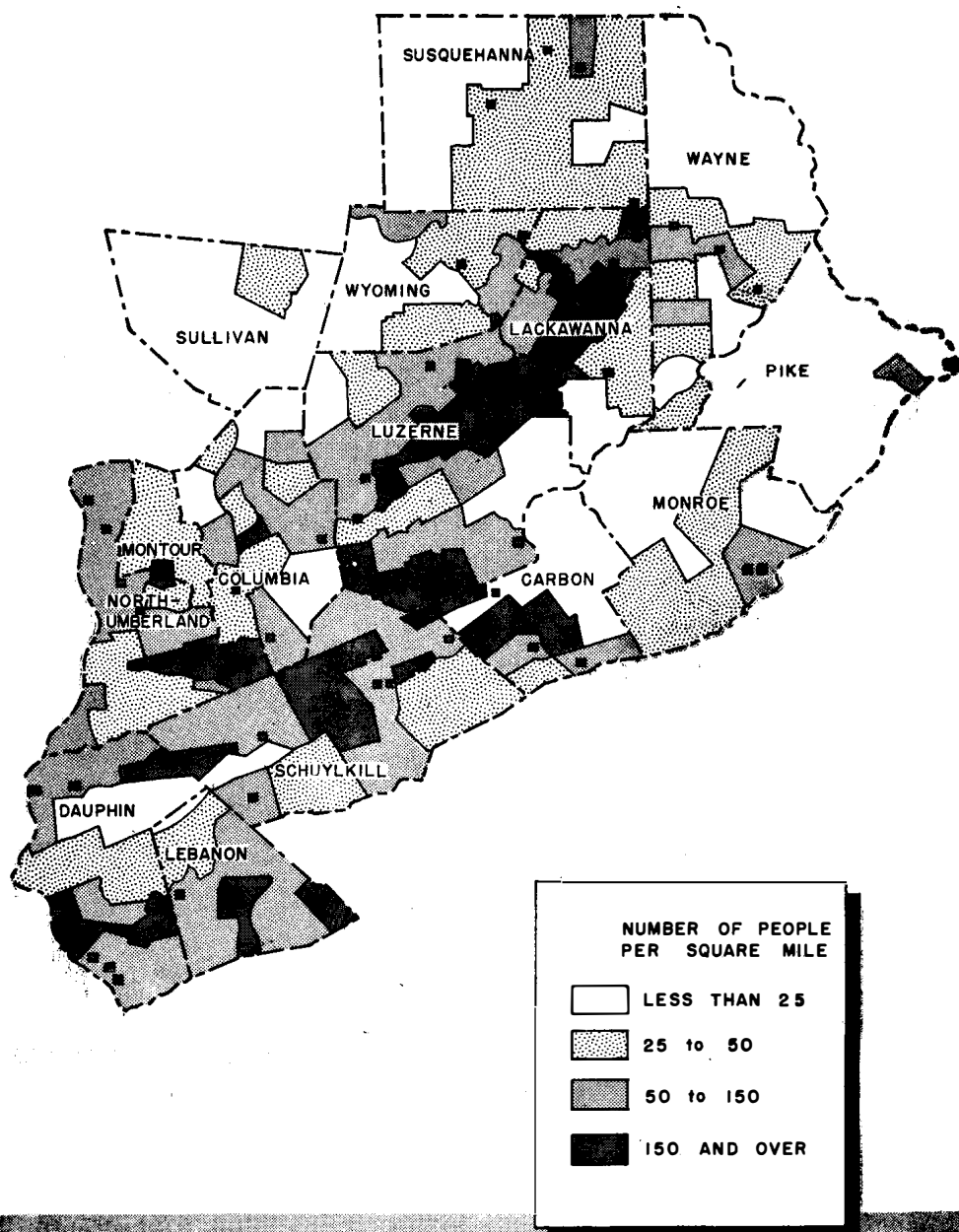


Figure 1

# **POPULATION DISTRIBUTION** in the **ANTHRACITE REGION - 1940**

BASED ON POPULATION DENSITY MAP - BUREAU of the CENSUS

# THE POPULATION AND EMPLOYMENT OUTLOOK FOR THE ANTHRACITE REGION OF PENNSYLVANIA

By James C. Rettie\*

## INTRODUCTION AND SUMMARY OF FINDINGS

Throughout the 1930's unemployment was widespread and chronic in the Anthracite Region of Pennsylvania. In 1939 the concern of the local people led to a Congressional appropriation for a survey of the potential contribution of forests to the alleviation of this problem and to the permanent economy of the area. Unemployment has disappeared because of the war, but the question arises, "Will there again be a scarcity of jobs after the war?"

This study is an appraisal of the population and employment situation which has developed since 1940 and of the reemployment problem which will confront the Anthracite Region as war demobilization unfolds. Because the situation in this area clearly calls for serious concern by many agencies and for planning and action far beyond the scope of forest management or the forest industries, it has been decided that the results of this employment outlook analysis should be released prior to the forthcoming report on the forest situation. Stated in the briefest possible terms, the findings of the present study are as follows:

Since 1924 coal output has dropped from 85 million tons to about 60 million. Employment in the mines dropped from 158,000 to less than 100,000 in 1940 and still further to about 80,000 in 1944. Oil, bituminous coal, coke and gas have captured a considerable share of the fuel markets once held by anthracite. Only a moderate recapture of these lost markets can be expected.

In 1940, after ten years of very serious unemployment in the six principal coal producing counties and an outward migration of 99,000 persons, there were still 145,000 persons (30 percent of the labor force) seeking employment or being supported on public emergency work projects. In the seven surrounding counties to the east and west, 20 percent of the labor force was out of work. In the two counties to the south, nearly 13 percent of the labor force was unemployed. The population distribution for the entire region as of 1940 is indicated by the map shown in Figure I.

In the six principal coal producing counties, which constitute the main problem, it is known that unemployment has temporarily disappeared. About 113,000 young men and women have entered the armed forces. Another 74,000 workers have gone elsewhere to employment in

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\*Chief, Forest Utilization Service. Northeastern Forest Experiment Station. Acknowledgement is made to John Buttrick, for aid in compiling the information used in this report.

war industries. The coming-of-age of new workers, increased employment of women and older men and longer working hours have made it possible for these six counties to supply this huge force to the military and to war industry, and at the same time increase their own production and employment. There are probably 20,000 more persons at work now than were employed in 1940.

But what of the post-war readjustment period - say 1945 to 1950? Calculating from the available data and assuming that the total peace-time armed forces of the United States will require not more than 2 million; that war losses including those totally disabled will not exceed 3 percent of the number now in service; that not more than one-half of the war industry migrants will return; that employment within the region in mining, manufacturing and service occupations will hold wartime gains and recover wartime losses; there still looms the discomfiting prospect of 100,000 persons without jobs in these six counties. Elsewhere in the region the outlook is more favorable but there is nothing to indicate that the outer areas can absorb any large proportion of the excess labor that may be available in the coal producing areas.

#### ANALYTICAL BREAKDOWN INTO THREE GROUPS OF COUNTIES

In order to deal with the total reemployment problem in realistic terms it has seemed advisable to subdivide the fifteen counties which are covered by the forest survey into three groups according to the dominant feature of their economy. The first and most important of these groups consists of the six principal coal producing counties situated, more or less, in the heart of the region. In order of their importance from the standpoint of coal production, these are: Luzerne, Schuylkill, Lackawanna, Northumberland, Carbon, and Columbia. A small amount of anthracite coal is mined in four other counties but in none of these does coal mining rank as a major occupation. Adjacent to the principal coal producing area and forming an inverted "U" around the eastern, northern, and western sides, are seven counties which are quite strongly tied to the mining economy. In these, agriculture and its related activities provide the chief source of gainful employment. A large part of the market for the produce is in the nearby coal mining communities. This fringe area, hereafter referred to as the "rural counties", supplies the mines with various wood materials -- lumber, props, and lagging. The rural counties, in order from east to west, are Monroe, Pike, Wayne, Susquehanna, Wyoming, Sullivan, and Montour. On the southern end of the coal producing area and also linked to it in a considerable degree are Dauphin and Lebanon counties. Both of these contain coal measures which may in time be operated on a large scale. At present, however, metals manufacturing is the dominant industrial activity.

The inherent differences in the basic economy of these three groups of counties are evident in the curve of population changes covering the period from 1890 to 1943 as shown in Figure II. The six principal coal producing counties experienced a very rapid increase of

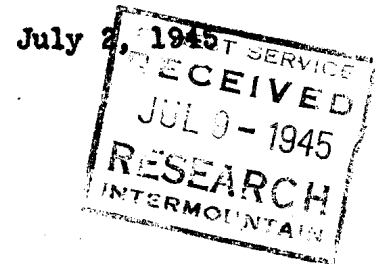


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Dear Sir:

Widespread and chronic unemployment during the 1930's in the Anthracite coal producing region of northeastern Pennsylvania led the Congress to authorize a forest survey of that area. The object was to determine how much contribution could be made by the forest resources toward the alleviation of unemployment and the improvement of general economic conditions. One feature of the survey has been an appraisal of the population and employment outlook during the period of postwar demobilization. This shows that the situation urgently calls for serious concern by many agencies and for planning that goes far beyond the scope of forest management and forest industry development. It has therefore seemed advisable to release the attached paper on the employment outlook in advance of the forest survey report.

In the next few years the region will be faced with the problem of reemploying some 116,000 persons who will be mustered out of the armed forces and another 36,000 who may be returning from their present jobs in outside war industries. Even the most optimistic estimate that can, with reason, be justified (assuming wholly favorable national as well as regional economic conditions) shows that within the Anthracite Region there is most likely to be a deficiency of about 100,000 jobs.

At present some 7,000 persons are employed in the wood-using industries. The forest resource is in very poor condition. With the best types of management, the forests might, in time, provide direct employment for 30,000. The fact that the region is adjacent to the world's best and largest wood-consuming market would justify a rehabilitation program which could employ as many as 5,000 additional men for the next five years. These 5,000 persons would only be about one-twentieth of the total who are likely to be lacking employment.

The situation calls for sober thought and vigorous remedial programs.

Very truly yours,

HARDY L. SHIRLEY, Director

By *G. Luther Schmur*  
G. Luther Schmur, Acting

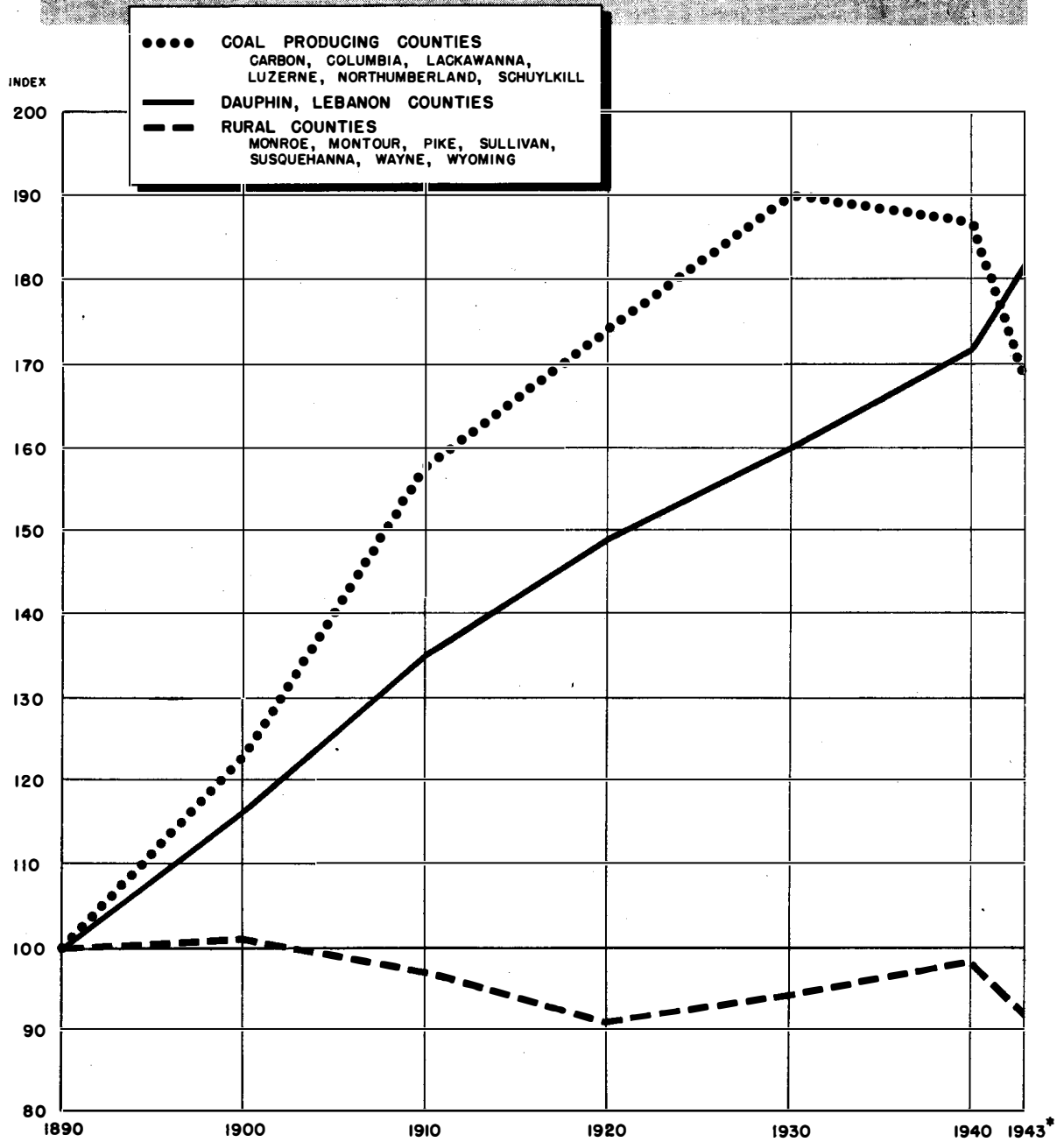
Enclosure

Figure II

# POPULATION TRENDS

1890-1943

1890 = 100



\*Bureau of the Census estimate adjusted to credit all persons serving in the armed forces to their respective home counties.



population between 1890 and 1910 and a further consistent increase up to the end of the 1920's. Between 1930 and 1940 there was a decline in the total population of the area -- indicating a heavy out-migration. Since 1940 this outward movement has been greatly accentuated. The rural counties show a very different population trend. Here the loss of population began soon after 1900 and continued until after the first World War. Between 1920 and 1940 there was a moderate increase. World War II has induced another exodus. The industrialized counties of Dauphin and Lebanon show a very even and sustained population increase throughout the entire period with accelerated growth since 1940.

#### MIGRATION 1930-1940 and 1940-1943

Census data on the total population, when considered without taking into account the natural increase which has occurred during a given period, often do not reveal more than a small part of a population shift. This is definitely the case with respect to the six principal coal producing counties in the ten years from 1930 to 1940. The following data indicate what actually happened:

	<u>Coal producing counties</u>	<u>Rural counties</u>	<u>Dauphin-Lebanon counties</u>
Population in 1930	1,231,698	135,528	232,334
Excess of births over deaths 1930-1939 <sup>1/</sup>	<u>78,535</u>	<u>5,187</u>	<u>11,482</u>
Total	1,310,233	140,715	243,816
Population as reported by 1940 census	1,211,127	140,753	250,051
Apparent net migration - outward; + inward	- 99,106	+ 38	+ 6,235

Something like 99,000 persons left the six coal producing counties in the decade 1930-1940. There was practically no net movement either out of or into the seven rural counties. Dauphin and Lebanon counties received about 6,000 persons from elsewhere.

Two independent estimates of the population in each county of Pennsylvania in 1943 are available. One of these, as of November 1, 1943, was made by the federal Bureau of the Census on the basis of registrations for War Ration Book Four<sup>2/</sup>. In this estimate those persons

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<sup>1/</sup> From the records of the Bureau of Vital Statistics, Pennsylvania State Department of Health.

<sup>2/</sup> U. S. Bureau of the Census; Estimated Civilian Population of the United States by Counties, November 1, 1943. Series P-44 No. 3, February 15, 1944.

now absent in the armed forces were, of course, not included in the count. It is, in fact, an estimate of the civilian population. The other estimate, as of August 1, 1943, was made by the Pennsylvania State Planning Board<sup>3/</sup>. It was based upon the annual school census and the number of births and deaths reported to the State's Bureau of Vital Statistics. In this estimate the persons serving in the armed forces are thus credited to their respective home counties. When the Bureau of the Census estimate is adjusted by adding the number of persons now serving in the armed forces, it shows a substantially larger out-migration from the six principal coal producing counties and a larger in-migration for Dauphin and Lebanon counties than is indicated by the State estimate. For the rural counties the two estimates come out almost exactly the same. The fact that the persons most likely to migrate in search of war industry jobs are the young unmarried persons and young couples without children explains why an estimate based on the school census would underestimate the migration<sup>4/</sup>.

The net losses and gains of civilian population according to each of the two estimates are shown below:

	Coal producing counties	Rural counties	Dauphin-Leb- anon counties
Population 1940	1,211,127	140,753	250,051
Bureau of the Census estimate of civilian population	975,703	122,965	241,633
Persons in armed forces <sup>5/</sup>	<u>113,246</u>	<u>9,310</u>	<u>23,035</u>
Total	1,088,949	132,275	264,668
Net change on basis of Bureau of the Census Estimate	- 122,178	- 8,478	+14,617
Net change on basis of Planning Board estimate	- 90,107	- 8,475	+10,475

<sup>3/</sup> Pennsylvania State Planning Board: Release dated August 12, 1943.

<sup>4/</sup> The fact that the two estimates for outward migration from the rural counties come out to the same figure suggests that this movement has consisted almost entirely of families. This would seem reasonable since it is unlikely that a wife and children can continue to operate a farm after the husband has gone. The younger men have stayed because occupational deferments are cancelled when they leave agriculture.

<sup>5/</sup> Information supplied by the State Director of Selective Service shows

Both of these estimates were made in 1943. The population movements which they reveal certainly went on for some time longer. The minimum rounded figures for the total wartime movement which will be used in subsequent analyses are: for the coal producing counties, out-migration of 124,000; for the rural counties, out-migration of 9,000; for Dauphin and Lebanon counties, in-migration of 15,000.

#### CALCULATION OF THE FUTURE POPULATION, 1945, 1950, 1960

Calculations of the size of the population which may be expected in the Anthracite Region during the next fifteen years are greatly complicated by the unpredictable factor of migration. The fact that somewhere between 15 and 20 percent of the civilian population of the coal producing area has left during the past decade and a half, and that another 10 percent is now away fighting, creates a highly abnormal situation. In all this movement, a very large proportion has been made up of the younger people. This can be expected to have a profound effect upon the rate of natural increase. War losses and the inevitable decision of some men and women to locate elsewhere after discharge from the armed forces will further deplete the younger age groups. The virtual failure of the Anthracite Region to secure any new and large war industries coupled with the heavy unemployment which prevailed through the 1930's makes the prospect of any compensating in-migration of young persons very slight.

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that as of August 31, 1944 the number of men inducted into the armed forces through Selective Service, including voluntary enlistments subsequent to registration, were as follows: coal producing counties, 104,659; rural counties, 9,006; Dauphin and Lebanon counties, 21,150. Men in all the services who had enlisted prior to Selective Service registration in October 1940 represented 2.2 percent of the United States total male labor force. Assuming that this same percentage applied in the Anthracite Region and that nine out of every ten of these men are still in service, the numbers to be added are: coal producing counties, 7,247; rural counties, 190; Dauphin and Lebanon counties, 1,523. Women serving in the armed forces at the end of 1944 will number about 148,000 or 1.2 percent of the female labor force as of 1940. On this proportional basis the number from the Anthracite Region will be: coal producing counties, 1,340; rural counties, 190; Dauphin-Lebanon, 362.

The population and employment forecasts which have been made involve three steps. The first is a calculation of total population in 1945, 1950, and 1960 based on the 1940 census by applying the birth rates and mortality rates which prevailed in 1939-1941<sup>6/</sup>. The second step is an estimate of the labor force with adjustments to take into account the demobilization of the armed forces and of war industry. The third step is an estimate of the industrial distribution of the employed labor force in 1945 and in 1950. The methods used in making these estimates are described in the Appendix.

If consideration of the effects of migration is, for the moment, deferred, and only the natural increase which could have been expected on the basis of the birth and mortality rates for the period around 1940 is considered, the following results are obtained:

#### TOTAL POPULATION

Year	Coal producing counties	Rural counties	Dauphin-Lebanon counties
1940	1,211,127	140,753	250,051
1945	1,250,718	144,045	255,746
1950	1,290,976	146,698	262,162
1955	1,325,223	149,436	263,581
1960	1,346,681	151,672	264,163
Natural increase			
1940-1960	135,554	10,919	14,112
	11.2%	7.8%	5.6%

Much more important, however, from the standpoint of employment than the rate of increase of the total population will be the rapid change in its age composition. This is made evident by comparing

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<sup>6/</sup> The procedure here used is that which has been extensively employed by Warren J. Thompson and P. K. Whelpton of the Scripps Foundation for Research in Population Problems. War has a temporary effect upon the birth rate and has caused erratic changes in the Anthracite Region. The rates used, however, are believed to represent the level which can be expected to prevail for some time.

the age distribution in 1940 with the age distribution as it would be in 1960 even without migration<sup>7/</sup>. The results of this comparison follow:

	1940	1960	<u>Net change</u>	
			<u>Number</u>	<u>Percent</u>
<u>Coal producing counties</u>				
Under 15	309,558	288,456	- 21,102	- 6.8
15 - 40	525,181	511,713	- 13,468	- 2.6
40 - 65	307,937	417,367	+ 109,430	+ 35.5
65 and over	68,451	129,145	+ 60,694	+ 88.7
<u>Rural counties</u>				
Under 15	34,685	35,325	+ 640	+ 1.8
15 - 40	53,098	56,578	+ 3,480	+ 6.6
40 - 65	39,032	42,783	+ 3,751	+ 9.6
65 and over	13,938	16,985	+ 3,047	+ 21.9
<u>Dauphin-Lebanon counties</u>				
Under 15	57,162	54,709	- 2,453	- 4.3
15 - 40	103,237	94,656	- 8,581	- 8.3
40 - 65	70,188	85,360	+ 15,172	+ 21.6
65 and over	19,464	29,439	+ 9,945	+ 51.1

With the exception of the rural counties which contain only 10 percent of the population; the Anthracite Region will, in all probability have fewer persons under 40 years of age in 1960 than it had in 1940. The number of persons beyond 65 years of age will have more than doubled<sup>8/</sup>.

These conditions will be greatly accentuated by the effects of the war. The strength of the United States postwar armed forces will probably be not less than 2,000,000 or 17 percent of present strength<sup>9/</sup>. The Anthracite Region will, no doubt, provide its proportionate quota.

7/ Assuming current birth and death rates but not migration or war losses.

8/ This trend is, of course, not unique to the coal producing counties. It will occur in all the urbanized areas in the country.

9/ See E. E. Hagen and N. B. Kirkpatrick, "The National Output at Full Employment in 1950", American Economic Review, September, 1944, p 482.

Several attempts have been made by systematic inquiry to determine what proportion of the persons now working away from their own community in war industry can be expected to remain where they now are<sup>10/</sup>. The results indicate that from 40 to 50 percent do not want to return to their prewar home community. The heavy and prolonged unemployment which prevailed in the six coal producing counties in the 1930's makes it seem most likely that not more than 50 percent of the persons now absent in war industry employment will return. The combined effect of these influences will greatly reduce the labor force in the Anthracite Region after the war. This is, in part, a fortunate circumstance for a region which has suffered so greatly from declining employment in recent years. It is not so fortunate, however, from the standpoint of the quality of the labor force which will be left -- there will be an undue proportion of older people who are less adaptable to new jobs and new industries.

#### ESTIMATE OF THE LABOR FORCE - 1945, 1950, 1960

The labor force estimate was made in two steps. The first was an estimate of the expected size of the labor force had there been no migration subsequent to 1940. The second involved adjustments which took migration into account.

The primary labor force estimate was made on the basis of the number of persons between 15 and 65 in 1940 and the number that would be expected in those same age brackets in 1945, 1950 and 1960<sup>11/</sup>. In 1940 the labor force of the coal producing counties comprised 56.9 percent of all persons between 15 and 65. The corresponding percentage for the rural counties was 55.2 and for Dauphin-Lebanon counties 61.3<sup>12/</sup>. These percentages were increased for 1945 to take into account the current labor shortage conditions which have increased the employment of women and older men. The percentages were lowered somewhat by 1950 to allow for return of some working women to full-time home duties and for increased retirement of older men.

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<sup>10/</sup> One of them was made by the Kaiser Company in its three large shipyards in Portland, Oregon, and Vancouver, Washington.

<sup>11/</sup> From the estimates above described.

<sup>12/</sup> Farmers' wives and unpaid family workers are not included in the labor force as defined by the Bureau of the Census. This accounts for the lower percentage in the rural counties.

The percentages are further reduced by 1960 to allow for increased school attendance beyond the age of 15 and for a further increase of retirements. The results of the procedure follow:

	1940 <sup>13/</sup>	1945 <sup>14/</sup>	1950 <sup>14/</sup>	1960 <sup>14/</sup>
<u>Coal producing counties</u>				
Population ages 15-65	833,118	895,240	922,873	929,070
Percent in labor force	56.9	60.0	58.0	53.0
Labor force	474,082	537,144	535,266	492,407
<u>Rural counties</u>				
Population ages 15-65	92,130	96,359	97,960	99,362
Percent in labor force	55.2	58.0	56.0	54.0
Labor force	50,892	55,889	54,858	53,656
<u>Dauphin-Lebanon counties</u>				
Population ages 15-65	173,425	179,653	181,509	180,016
Percent in labor force	61.3	65.0	63.0	60.0
Labor force	106,296	116,774	114,351	108,010

Adjustments of these labor force data to take into account those persons who are absent in the armed forces and in war industry can be made with fair precision insofar as 1945 is concerned. For 1950 and 1960, it is necessary to make arbitrary judgments as to how many of the persons now in the armed services and in war industries will return.

If by 1950 the armed forces of the United States are cut down to 17 percent of their present size, it is fair to suppose that 17 percent of the number now in the services from the Anthracite Region will be in the peacetime forces. Total casualties at the end of February, 1945 stood at approximately 840,000, of which 181,000 were dead<sup>15/</sup>. Even under the most fortunate conditions, it seems probable that the total of casualties before the end of the war will reach 1,200,000 or more, of which 250,000 will be dead and probably another 100,000 dis-

<sup>13/</sup> From the Bureau of the Census.

<sup>14/</sup> Primary estimate without adjustment for migration and war losses.

<sup>15/</sup> As reported by Secretary of War Stimson, March 15, 1945. The figures for deaths do not include other deaths which will later be reported from among those now "missing in action".

abled<sup>16/</sup>. These losses would represent about 3 percent of the numbers now in service. It seems very likely that postwar enlistments plus the minimum war casualties will add up to 20 percent of the number of persons now in the armed forces. Some of those discharged will, no doubt, decide to settle elsewhere than in their home counties, but we have no basis for an estimate of the number who will do so.

In the population which has moved to take war industry employment the proportion of workers is certainly much larger than it is for the population as a whole. Certainly not less than 60 percent were labor force people. It seems probable that not more than half of those who have gone from the coal producing counties and from the rural counties to war industry employment will have returned by 1950 and that the remainder will stay away permanently.

The sustained growth of population in past years, coupled with a well diversified economy adjacent to Philadelphia and other densely populated areas, gives reason to believe that at least 60 percent of the labor force which has entered Dauphin and Lebanon counties since 1940 may stay permanently.

Applying these conclusions in a further analysis of the data developed above, the following results are obtained:

	1945	1950	1960
<u>Coal producing counties</u>			
Estimated potential labor force	537,144	535,266	492,407
Depletion to the armed forces	113,246	22,649	( 60,000
Depletion to war industry	74,400	37,200	(
Estimated available labor force	349,498	475,417	432,407
<u>Rural counties</u>			
Estimated potential labor force	55,889	54,858	53,656
Depletion to the armed forces	9,310	1,862	( 4,500
Depletion to war industry	5,400	2,700	(
Estimated available labor force	41,179	50,296	49,156
<u>Dauphin-Lebanon counties</u>			
Estimated potential labor force	116,774	114,351	108,010
Depletion to the armed forces	23,035	4,607	( 800
Gain attributable to war industry	9,000	5,400	(
Estimated available labor force	102,739	115,144	108,810

<sup>16/</sup> A recent estimate of war losses (dead and permanently disabled) by 1950 is 500,000. This may occur if the war should continue into 1946. See E. E. Hagen and N. B. Kirkpatrick, "The National Output at Full Employment in 1950", American Economic Review, September, 1944.



The final upshot of all these estimates is this: (a) Sometime between 1945 and 1950 about 127,800 people who will need gainful employment may want to return to the six coal producing counties. Of these about 90,600 will be the men and women mustered out of the armed forces and about 37,200 will be workers returning from war industry employment<sup>17/</sup>. (b) To the rural counties there may be a return of 7,400 from the armed services and possibly 2,700 from the war industry. (c) Dauphin and Lebanon counties will be due to receive back about 18,500 from the armed forces and may lose about 3,600 who have come in since 1940 to work in war industry.

#### THE PROSPECT FOR EMPLOYMENT 1945-1950

What is the prospect that these persons (116,500 from the armed forces and 36,300 from war production industry) will be able to find employment when they return to the Anthracite Region in the period between 1945 and 1950? Can the economic system of the region be expected to absorb as many workers as this?

The answer to these questions will, of course, depend very largely upon the general condition of the national economy. With a high level of production throughout the nation in the postwar period, all regional problems will be simplified. In certain areas, however, and the Anthracite Region is one of these, there will be very acute reemployment problems even under the most favorable national conditions. The fact that there were in April, 1940, no less than 145,000 persons in the six coal producing counties who were either seeking work or dependent upon public emergency employment<sup>18/</sup> cannot be neglected when looking ahead to postwar conditions. This huge bloc of persons (30 percent of the labor force) was out of work largely as a result of the long-term decline of employment in anthracite mining<sup>19/</sup>. In 1943 these mines were producing about 20 percent more coal than in 1940 with about 15 percent fewer employees<sup>20/</sup>. Part of this increased production has been due to full-time work as against the

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<sup>17/</sup> This assumes that only one-half of the workers who have left since 1940 will return. The actual number will depend very greatly upon the employment conditions in the communities where they now are.

<sup>18/</sup> As reported by the Bureau of the Census, 1940.

<sup>19/</sup> See Penna. State Dept. of Mines: Fourteen Year Study of Anthracite, by Counties. April 15, 1943. See also Federal Anthracite Coal Commission: Economic Conditions in the Anthracite Coal Regions. 77th Congress, 2nd Session. House Document 709, April 21, 1942.

<sup>20/</sup> See U. S. Dept. of Commerce: Monthly Survey of Current Business, coal mining, anthracite.

part-time employment which was all too common during the 1930's<sup>21/</sup>. The rest is due to increased hours per day and, possibly, some improvement in output per worker<sup>22/</sup>. It is almost certain that the 1944 level of anthracite coal production could be maintained after the war with somewhat fewer employees than were in the industry in 1940 providing the persons so employed worked on a full-time basis<sup>23/</sup>.

Realistic analysis of the employment prospects of the postwar period must not rest upon factors unrelated to the overall economy which existed in 1940 and the economy that exists today. It is therefore necessary to consider the industrial distribution of the labor force as it was in 1940, as it is today, and as it may be in 1950. This has been done for each of the three groups of counties in the Anthracite Region in the tables and figures which follow.

While it is impossible to claim any close accuracy for the 1950 estimates, the figures for 1945 are probably not in error more than  $\pm 10$  percent. It will be noted that the estimates for 1950 assume the maintenance of wartime increases in the textile industries and also in the metals manufacturing industries. It is also taken for granted that agriculture will support a few more persons in 1950 than it did in 1940, and that the same condition will prevail in construction. There has been a deliberate effort to be as optimistic as reason will permit. One cannot avoid, moreover, the final conclusion that about 100,000 persons in the six coal producing counties may be without jobs by 1950. This is indeed a very grave prospect and one which demands the strongest kind of remedial program.

The employment outlook for the postwar period in the rural counties is far better than in the mining area. Here the unemployed in 1940 numbered only 20 percent of the labor force as against the 30 percent which prevailed in the coal producing counties. The agriculture of this area shows no serious decline. The forest resource can, without question, support more people than it did in 1940. In Wayne, Pike and Monroe counties there should be an increasing development of

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<sup>21/</sup> The average number of days worked per worker in 1940 was 187 per year. See Fourteen Year Study of Anthracite.

<sup>22/</sup> See U. S. Department of Labor, Bureau of Labor Statistics: Productivity and Unit Labor Costs in Selected Mining Industries. 1935-1943. May 1944, page 3.

<sup>23/</sup> On the basis of the 40-hour, five day week, full time employment implies between 231 and 261 days of employment, depending on vacation.

# COAL PRODUCING COUNTIES

Industrial distribution of the labor force 1940  
Estimates for 1945 and 1950. Labor force in prospect 1960

	1940*	1945	1950	1960
Available labor force	474,582	349,500	475,400	432,400
Employment	329,656	349,500	375,000	
Mining	88,873	78,000***	85,000	
Textiles and apparel mfg.	34,246	38,000#	40,000	
Iron, steel, and other metals mfg.	6,401	(	(	
Machinery, transport equipment mfg.	4,837	( 22,000#	( 22,000	
Agriculture	11,381**	10,300	13,000	
Food and kindred products mfg.	7,557	7,700	7,800	
Forestry, forest products mfg.	3,434**	3,400	3,600	
All other mfg.	10,646	11,600	11,600	
Construction	10,208	6,000	12,000	
Total: Commodity producing	177,583	177,000	195,000	
Transportation	19,786	21,000	22,000	
Trade and service	132,287	151,500	158,000	
Total: Transport, trade, service	152,073	172,500	180,000	
Seeking employment and on public emergency work	144,926	nil	100,400	

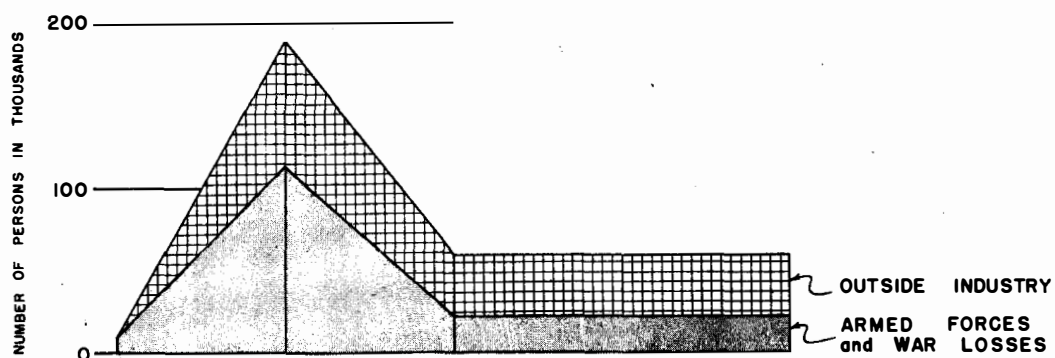
\* From the Bureau of the Census, 1940.

\*\* Adjusted to take into account partial coverage by the Census of woods employment and small wood working establishments.

\*\*\*Based on monthly index of employment in anthracite coal mining as reported by U. S. Department of Commerce: Survey of Current Business.

# Based on data for 1942 reported by Pennsylvania State Dept. of Internal Affairs: Industrial Directory of the Commonwealth of Pennsylvania.

## LOSS TO THE ARMED FORCES AND OUTSIDE INDUSTRY



## LABOR FORCE Past, Present, and Future

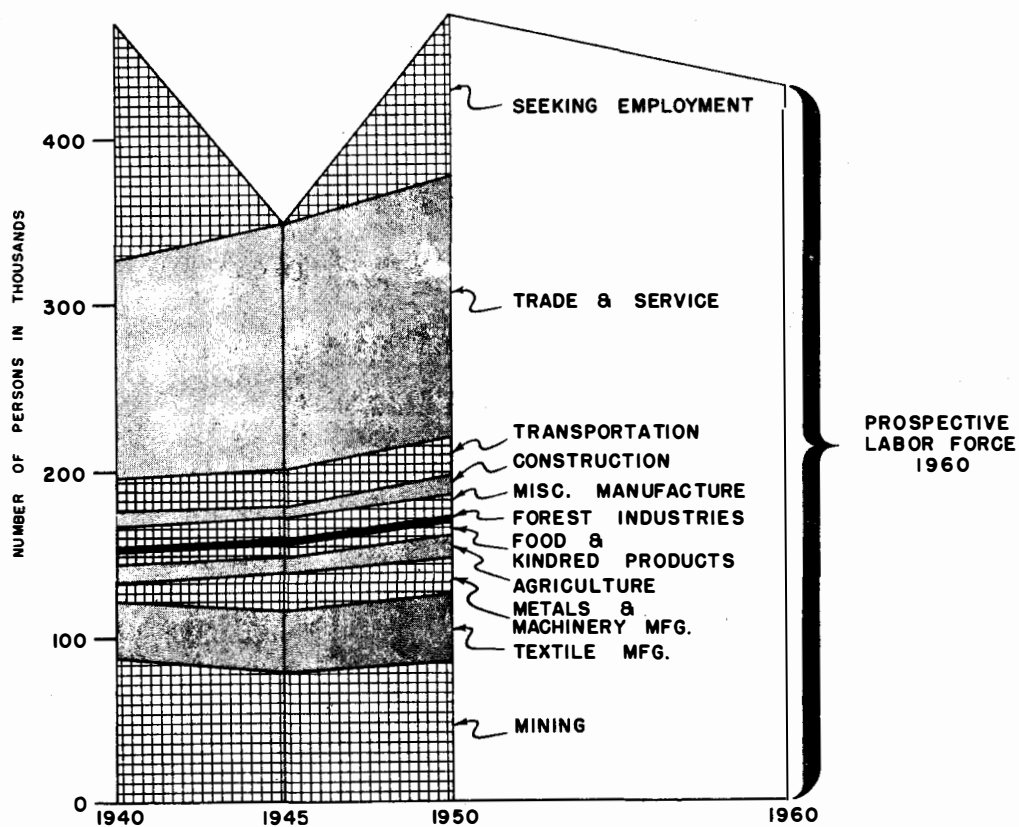


Figure III

## COAL PRODUCING COUNTIES

Industrial distribution of the labor force — 1940  
 With estimates for 1945 and 1950  
 And the prospective labor force — 1960

recreational services to meet the demands of the nearby heavily populated areas of New Jersey and New York City. The following employment outlook is based on statistical analysis of the 1940 employment pattern.

# RURAL COUNTIES<sup>24/</sup>

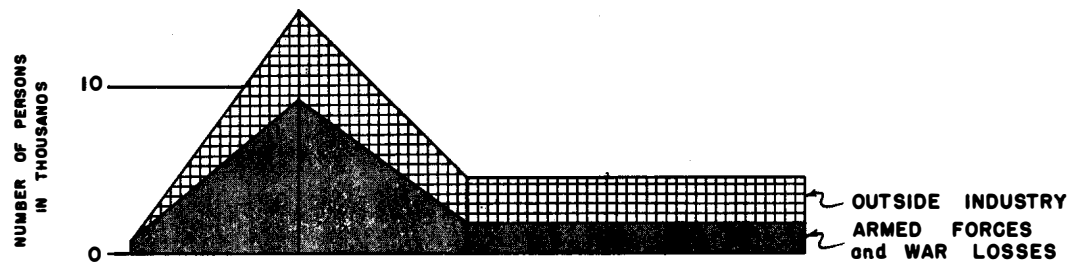
Industrial distribution of the labor force 1940  
Estimates for 1945 and 1950. Labor force in prospect 1960

	1940	1945	1950	1960
Available labor force	50,895	41,200	50,300	49,200
Employment	40,545	41,200	48,000	
Agriculture	10,777	10,000	11,000	
Food and kindred products mfg.	586	650	700	
Textiles and apparel mfg.	2,556	3,400	3,000	
Iron, steel, and other metals mfg.	1,005	1,500	1,200	
Mining	982	900	800	
Forestry, forest products industries	2,273	2,500	3,000	
All other mfg.	2,033	2,200	2,100	
Construction	2,353	1,600	2,500	
Total: Commodity producing	22,565	22,750	24,300	
Transportation	2,243	2,000	3,000	
Trade and service	15,737	16,450	20,700	
Total: Transport, trade, service	17,980	18,450	23,700	
Seeking employment and on public emergency employment	10,350	nil	2,300	

The estimate for 1950 is admittedly a hopeful one but still within reason. It shows that there might be some 2,300 persons without jobs. This number is, however, only 4.5 percent of the total labor force and well within the margin of error that exists in the estimate for 1945. It seems clear that with a generally favorable national situation any unemployment problem that is likely to develop in the rural counties will be entirely manageable. A forest improvement program, by itself, could provide employment for 2,000 additional workers.

<sup>24/</sup> Explanatory footnotes to previous table apply to this one also.

## LOSS TO THE ARMED FORCES AND OUTSIDE INDUSTRY



## LABOR FORCE Past, Present, and Future

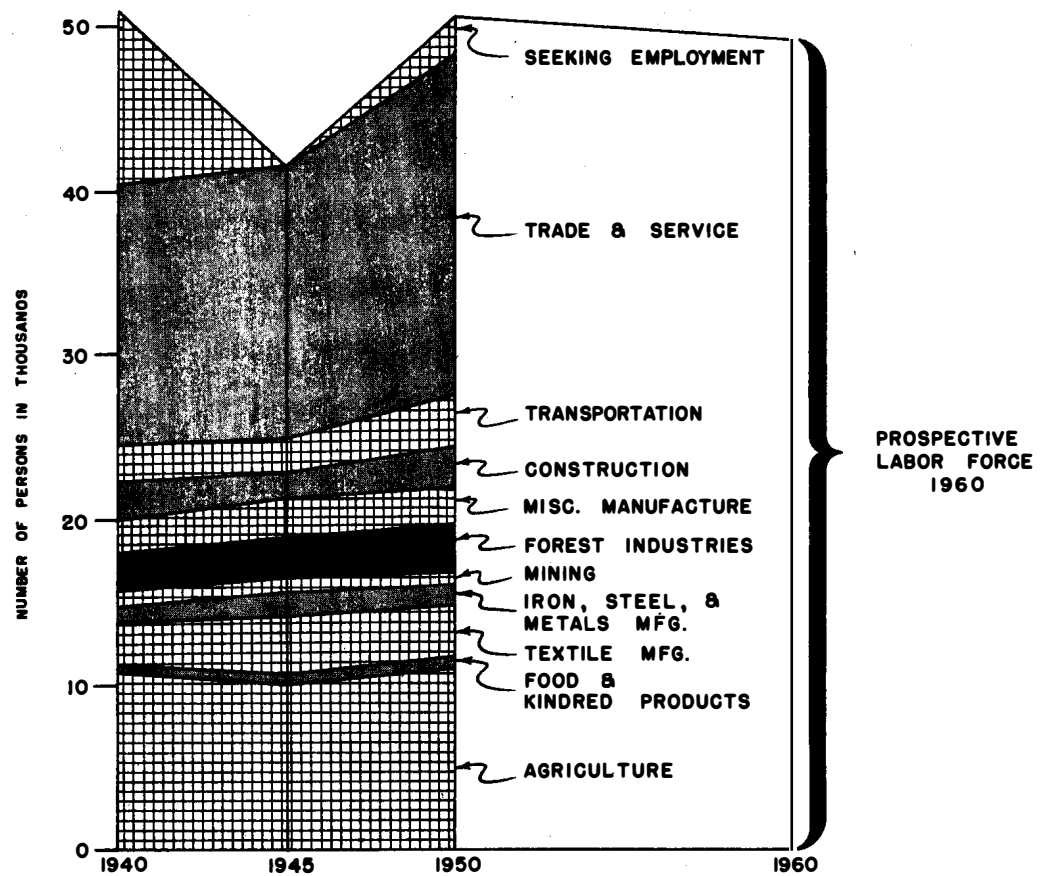


Figure IX

## RURAL COUNTIES

Industrial distribution of the labor force — 1940  
 With estimates for 1945 and 1950  
 And the prospective labor force — 1960

The outlook for Dauphin and Lebanon counties is not so good as for the rural area which has just been considered. Here the number of persons without jobs in 1940 numbered 13 percent of the labor force<sup>25/</sup>. This area has had the benefit of war industry employment. Some reduction of employment in these industries between 1945 and 1950 will be offset by a compensating out-migration of war industry workers. In our estimates it has been assumed that this group of departing workers may not exceed 40 percent of those who have come in since 1940. The estimates of labor force distribution for Dauphin and Lebanon counties are as follows:

#### DAUPHIN AND LEBANON COUNTIES<sup>26/</sup>

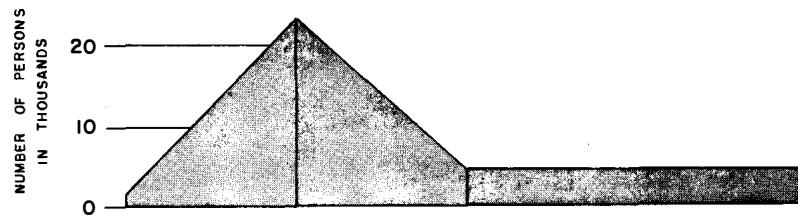
Industrial distribution of the labor force 1940  
Estimates for 1945 and 1950. Prospective labor force 1960

	1940	1945	1950	1960
Available labor force	106,296	102,700	115,100	108,800
Employment	92,547	102,700	104,300	
Iron, steel, and other metals mfg.	10,375	18,000	16,000	
Textiles and apparel mfg.	7,309	8,300	7,500	
Mining	2,177	1,500	2,000	
Machinery, transport equipment mfg.	1,024	1,700	1,600	
Leather and leather products	3,038	3,600	3,400	
Agriculture	5,231	5,000	5,600	
Food and kindred products mfg.	5,294	5,600	5,800	
Forestry, forest products industries	1,084	1,200	1,250	
All other manufacturing	2,619	2,900	2,700	
Construction	4,200	2,100	5,000	
Total: Commodity producing	42,351	49,900	50,850	
Transportation	5,924	6,500	6,750	
Trade and service	44,272	46,300	46,700	
Total: Transport, trade, and service	50,196	52,800	53,450	
Seeking employment and on public emergency work	13,749	nil	10,800	

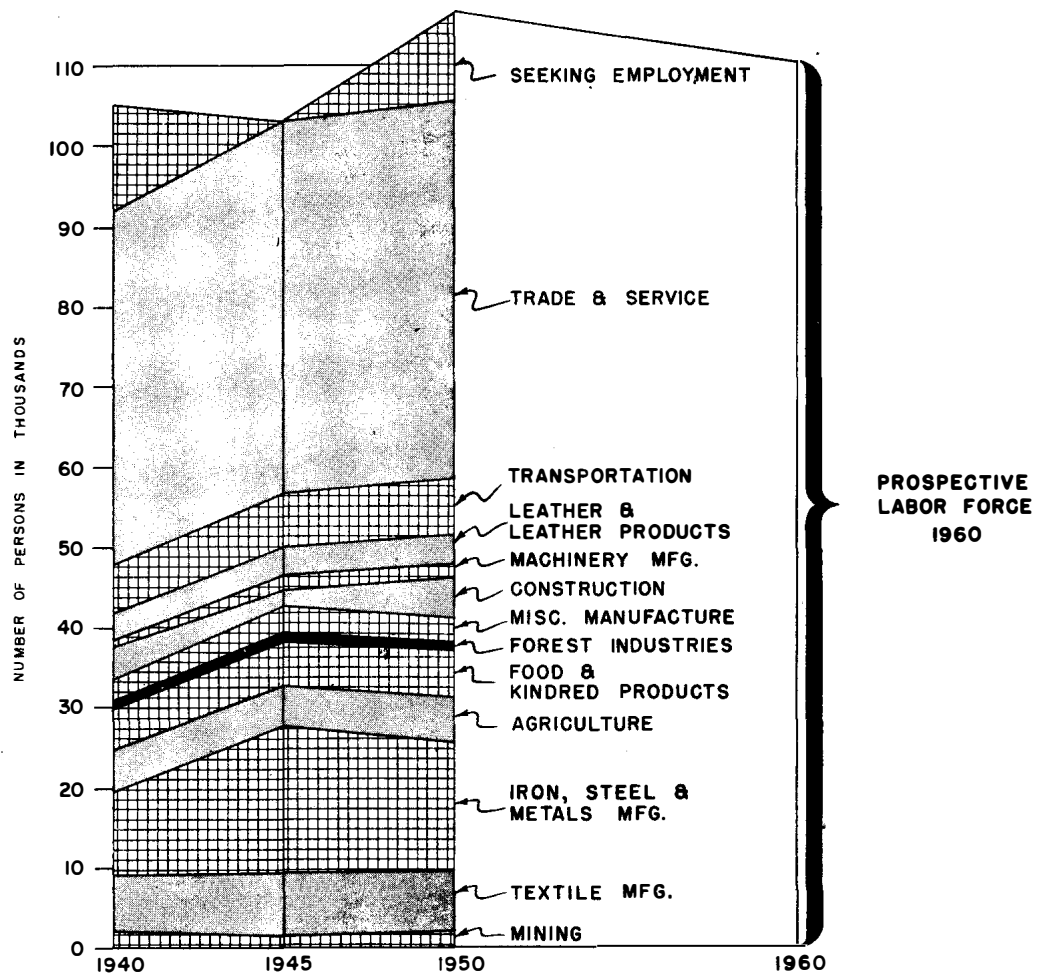
<sup>25/</sup> Compared with 30 percent in the coal producing counties and 20 percent in the rural counties.

<sup>26/</sup> Explanatory footnotes to coal counties table apply to this also.

## LOSS TO THE ARMED FORCES



## LABOR FORCE Past, Present, and Future



## Figure V DAUPHIN AND LEBANON COUNTIES

Industrial distribution of the labor force - 1940  
 With estimates for 1945 and 1950  
 And the prospective labor force - 1960



If the economic system of the nation as a whole is functioning at a high level of employment in 1950, it seems entirely possible that the available labor force in Dauphin and Lebanon counties could be employed in existing industries. The estimate of a 10,800 deficiency in number of jobs, however, points to a need for concern even in this economically diversified area.

### CONCLUSIONS

It is not possible nor desirable in this study to embark upon an analysis of the total economy of the Anthracite Region. It has been shown, however, that unless the re-employment problem is tackled in a comprehensive way and almost immediately, there will surely be a return of large-scale chronic unemployment in the principal coal producing communities.

This is a prospect which neither the nation nor the region can anticipate with indifference. There must be vigorous and concerted effort by industry and by government to avert so costly and so tragic a situation. The Federal Anthracite Commission reported to the Congress in 1942 that approximately \$330,000,000 had been expended for various forms of unemployment relief in the previous ten years<sup>27/</sup>. This amount far exceeds the total value of anthracite coal produced in any one year<sup>28/</sup>. Obviously, here is a regional problem which will not solve itself. If still further large relief expenditures are to be avoided, there must be an alternative program which will lead to the reconstruction of the basic economy of the area. This should certainly include the lowering of mining and coal transportation costs to place anthracite in a better competitive position, the provision of technical aid to the anthracite mining industry so that part of its lost markets may be recaptured, and the development of new uses for anthracite. The Congress has authorized the establishment of a federal laboratory for the study of possibilities for increased use of anthracite, but as yet no appropriation has been made to initiate the work. The reconstruction program will certainly require the development of new manufacturing industries wherever feasible to take up the slack of employment due to depletion of the mines. In the Carbondale-Scranton area and in the vicinity of Hazleton the reserve of coal is even now nearly gone. In some cases it will be necessary to provide for the relocation of population which would otherwise be stranded.

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<sup>27/</sup> Federal Anthracite Commission: Economic Conditions in the Anthracite Coal Regions. House Document No. 709, 77th Congress, 2nd Sess., Apr. 1942.

<sup>28/</sup> And, incidentally, the expenditures for relief also exceed the total taxable valuation (\$328,000,000) of Luzerne, the principal coal producing county. See Pennsylvania State Association of County Commissioners: The County Commissioner Sept. 1944 Page 2.

In the total job of economic reconstruction, the forest resource can play a major role in the whole rural area. At the present time about 7,000 persons are employed in forest industries in the six coal producing counties and in the nine surrounding counties. But the forest resources are in very poor condition. With good forest management they could eventually be built up to support employment for 30,000. A region-wide rehabilitation program to achieve this end could provide employment for about 5,000 persons for about five years. Since the Anthracite Region is adjacent to one of the largest and best wood-consuming markets of the world, this program is economically justifiable in the long run. At the same time it would contribute to the solution of what is bound to be a serious unemployment problem in the near future.

It should be noted, however, that this contribution is a small one. 5,000 persons is but a small proportion of those who may be needing new employment opportunities. The situation clearly calls for vigorous and resolute action on the part of industry and of government, local, state and federal.

## APPENDIX

### METHODS USED FOR ESTIMATING FUTURE POPULATION

#### The birth rate

Examination of the vital statistics for the counties of the Anthracite Region reveals, as would be expected, that the rural counties have a birth rate that is much higher than that of the urbanized coal producing counties and also higher than the rate which prevails in Dauphin and Lebanon counties. Since age distribution of the female population has a marked influence upon the number of children who will be born in any particular population, it is necessary to work out the birth rate in terms of five-year age groups between the lower and upper limits of the child-bearing period -- ages 15 to 44. Not having such data available for the three groups of counties under study, it was necessary to adjust the reported total number of births to a women-age-group distribution pattern similar to that which prevailed for the Middle Atlantic region in 1940. The rates which resulted from this adjustment are as follows:

<u>Births per year per thousand women by five-year age groups</u>				
<u>Age group</u>	<u>Middle Atlantic Region, 1940<sup>a</sup></u>	<u>Coal producing counties<sup>b</sup></u>	<u>Rural counties<sup>c</sup></u>	<u>Dauphin-Lebanon counties<sup>d</sup></u>
15-19	24.6	27	40	27
20-24	99.4	102	134	105
25-29	110.8	112	130	116
30-34	75.6	76	88	80
35-39	36.5	37	49	38
40-44	10.5	11	17	12
Total	358.2	367	458	378
Rate per 1,000 women 15-44	59.7	61.1	76.3	63.0

These one-year birth rates, in order to shorten computations, were converted by a smooth-curve method to the equivalent five-year rate.

a/ National Resources Planning Board: Estimates of the Future Population of the United States 1940-2000. Page 16.

b/ The fact that approximately 10 percent of the population of the six coal producing counties moved away in the 1930's makes the average for that period too high for purposes of forecasting. The rate here given is based on the average number of births in the period 1940-1943. Even this may be too high.

c/ Average for the period 1930-1939.

d/ Ibid.

Influences which tend to defer the marriage of young women, such as prolonged schooling and perhaps office work, are not especially strong in the Anthracite Region. The higher birth rates shown for the lower age brackets are believed to be justified even though confirming statistical evidence is not available.

#### Mortality rates

Life tables for the population of the Commonwealth of Pennsylvania for any period later than 1926-1931 have not been published. The improvements in life prolongation attained since that time make it seem unwise to base survival ratio tables for the period 1940-1960 on these old tables. As an alternative to using the out-of-date State life table, the United States life table for native white males and females 1939-1941 was used. Abridged five-year age group survival ratio tables were prepared and adjusted by smooth-curve method to the mortality for each of the three groups of counties as reported by the State Bureau of Vital Statistics. Only very minor adjustments were necessary. Computations were further shortened by working out the five-year survival ratio for each five-year age group. These are contained in Table I.

The fact that the death rate of infants in the first year of life is much higher than in subsequent early years, makes it necessary to work out a survival ratio applicable to those which are born currently during a five-year period. This survival ratio was also derived from the United States life tables 1939-1941, and is shown in footnote (a) Table I. In this instance the United States survival ratios were used without adjustment.

The procedure for calculating the number of females and the number of births, both male and female, in the six coal producing counties as of 1945 is shown in Table II. This was applied for the successive five-year intervals up to 1960 for each of the three groups of counties -- adding at each step the number of surviving children who were born in the previous five-year period.

Table I

Five-year survival ratios for five-year age groups of the population derived from United States life table 1939-1941, native white males and females<sup>a/</sup>

Age group	United States <sup>b/</sup>		Coal producing <sup>c/</sup> counties		Rural counties <sup>c/</sup>		Dauphin and <sup>c/</sup> Lebanon counties	
	Male	Female	Male	Female	Male	Female	Male	Female
0 - 4	.9810	.9847	.9650	.9750	.9650	.9750	.9646	.9747
5 - 9	.9946	.9961	.9941	.9958	.9941	.9958	.9937	.9949
10 - 14	.9934	.9956	.9935	.9957	.9935	.9957	.9930	.9953
15 - 19	.9902	.9932	.9905	.9934	.9905	.9934	.9897	.9921
20 - 24	.9881	.9913	.9882	.9913	.9882	.9913	.9869	.9899
25 - 29	.9865	.9894	.9865	.9893	.9865	.9893	.9850	.9872
30 - 34	.9825	.9868	.9825	.9868	.9825	.9868	.9804	.9850
35 - 39	.9761	.9826	.9760	.9827	.9760	.9827	.9732	.9803
40 - 44	.9647	.9757	.9650	.9737	.9650	.9737	.9627	.9695
45 - 49	.9472	.9648	.9500	.9640	.9500	.9640	.9478	.9620
50 - 54	.9217	.9484	.9229	.9475	.9330	.9476	.9210	.9433
55 - 59	.8865	.9228	.8908	.9264	.8910	.9266	.8893	.9256
60 - 64	.8391	.8832	.8462	.8857	.8465	.8860	.8452	.8848
65 - 69	.7710	.8199	.7805	.8305	.7810	.8310	.7803	.8302
70 - 74	.6719	.7228	.6810	.7340	.6820	.7350	.6811	.7342
75 +	.4556	.4897	.4300	.4665	.4300	.4675	.4296	.4666

a/ Survival ratio of children born currently during a five year period:  
Male .9574, Female .9661

b/ Derived from U. S. Dept. of Commerce: United States Life Tables 1939-1941.  
Vital Statistics, Special Reports. Vol. 19(4).

c/ Survival ratios for the three groups of counties were derived by smooth-curve adjustment of United States Survival Ratios to mortality in Anthracite Region counties for 1940-1943, reported by Pennsylvania State Bureau of Vital Statistics.

Table II. Computation of number of female survivors and number of births 1940-1945  
Six coal producing counties

Age group	Number of persons, 1940	Five-year survival ratio	Survivors 1945	Women 15-45 surviving at midway point	Five-year birth rate per 1,000 women	Births
0 - 5	42,980	.9750	41,906			
5 - 9	48,419	.9958	48,216			
10 - 14	61,263	.9957	61,000	61,131	20	1,223
15 - 19	65,841	.9934	65,406	65,624	185	12,140
20 - 24	57,991	.9913	57,486	57,739	545	31,468
25 - 29	52,338	.9893	51,778	52,058	555	28,892
30 - 34	46,350	.9868	45,738	46,044	320	14,734
35 - 39	40,748	.9827	40,043	40,396	135	5,453
40 - 44	38,069	.9737	37,068	37,569	35	1,315
45 - 49	37,109	.9640	35,773			
50 - 54	31,773	.9475	30,105			
55 - 59	25,026	.9264	23,184			
60 - 64	19,624	.8857	17,381			
65 - 69	15,267	.8305	12,679			
70 - 74	10,461	.7340	7,678			
75 +	10,121	.4665	4,721			

Total births 95,225; males at .511 sex ratio at birth, 48,660; females at .489 sex ratio at birth, 46,565; males surviving at end of period at .9574 = 46,587; females surviving at end of period at .9661 = 44,986.

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